

Choroid - middle coat.

- contains blood vessels.
- merges in ciliary body.

Ciliary body - muscle fibres + vascular spaces.

Suspensory ligament - attached to ciliary body.

- supports lens & iris.

- cataract - opaqueness of lens.

- corrected by removal of lens.

Iris - forms diaphragm controlling light admitted to eye.

- muscles contain different amounts of pigment.

- muscles arranged circularly + radially.

Circular muscles - contract - constrict pupil.

Radial " - contract - dilate pupil.

Retina - highly specialized ends of optic nerve.

Macula lutea - increased no. of cells.

Fovea centralis - reduced " " "

- several layers of cells, connect with terminal fibres of optic nerve.

Optic nerve - leaves as one fibre.

- nerves cross at optic chiasma, to calcarine area of brain.

Anterior chamber -

- lymph-like aqueous humor.

Posterior chamber -

- jelly-like vitreous humor.

Hyaloid canal -

- from optic nerve to posterior part of lens.

● Muscles of eye.

6 muscles.

4 straight - superior rectus - up
 internal rectus - in
 inferior rectus - down
 external rectus - out

2 oblique - superior oblique - through pulley - twists
 inferior oblique - without pulley

Blind spot - spot where optic nerve leaves eye.

Vision - dependent upon light rays falling upon sensitive portions of retina.

- when cells of retina are stimulated impulses carried to brain & we see.

● Vision defects.

- 1) defects in eye.
- 2) defects in optic tract.
- 3) defects in brain.

20 ft - light rays focus on retina without of eye.

nearer 20 ft - lens accommodates to focus.

Normal vision - light focuses without change.
- emmetropia.

Abnormal vision - ametropia.

- 1) Astigmatism - imperfect curvature of cornea & lens.
- 2) Presbyopia - diminished elasticity of lens.
- 3) Myopia) - lengthened & shortened
- 4) Hyperopia) eyeball.

Homonymous hemianopia -

- loss of vision to right half of eye -

caused by compression of right optic tract.
- depends on pressure & no. of fibres involved.

Pressure on nerve - hemorrhage, tumor
an inflammatory exudate.

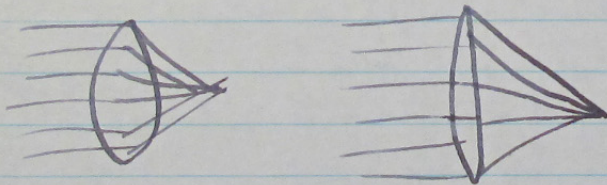
Chiasma affected by lesion.
- nasal field affected.
(heteronymous)

In front of chiasma - 1 faulty eye.

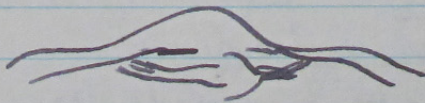
Defects in brain.

Injury to deeper tracts of optic nerve.
disturbance in visual area of
occipital lobes.

lens.



For vision.



Eye hygiene.

not vision.

Eyes - eye-strain.

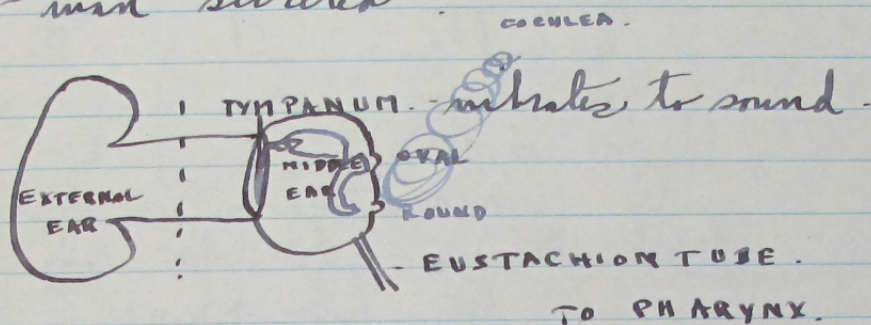
Diet - yellow pigment necessary.

Pink eye - infection.

ear.

External auditory organ - megaphone.

- lined with hairs.
- wax secreted



Two functions -

- 1) hearing
- 2) equilibrium

- thickening of ectoderm on walls of main area.

Sac - upper + lower portion.

- 1) utricle - semicircular canals
- 2) saccule - internal ear.

External ear -

- composed mainly of cartilage.
- arranged to conduct sound waves to opening - internal auditory meatus.

External auditory canal -

- from meatus down, forward & inward to drum membrane.
- cartilaginous & membranous for first part remainder bony.
- lined with skin -

contains hairs & sebaceous glands (ceruminous glands - wax) 343

Middle ear -

Tympanic cavity -

- lies in temporal bone.
- contains 3 small bones.
 - 1) malleus - attached to drum memb.
 - 2) incus - articulates ① + ②.
 - 3) stapes - fits into fenestra ovalis on medial wall.

Medial wall - opening (fenestra rotundum)

- covered by membrane.
- outlet for vibrations.
- lined with mucous membrane.

Antrum - opening to mastoid cells.

- (above & posterior to cavity.)
- liable to infection in cancellous bone tissue from tympanic cavity.

Eustachian tube

- from middle ear to naso-pharynx.
- part in bone - part in cart. & membrane.
- $1\frac{1}{2}$ " long - diameter 3 mm.
- lined with mucous membrane.
- transmission of air.

Use

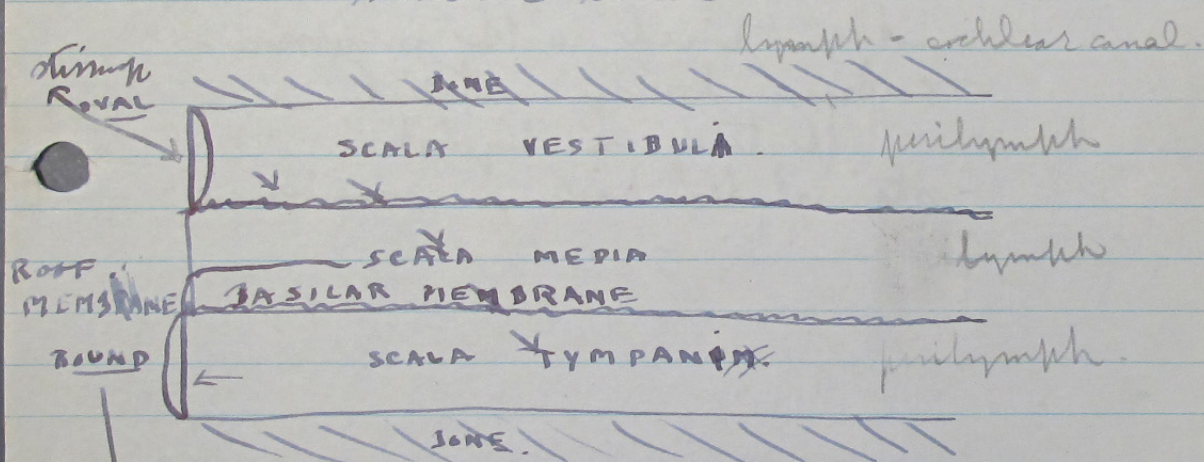
- equalizes pressure of middle ear & outside drum membrane.

Internal ear.

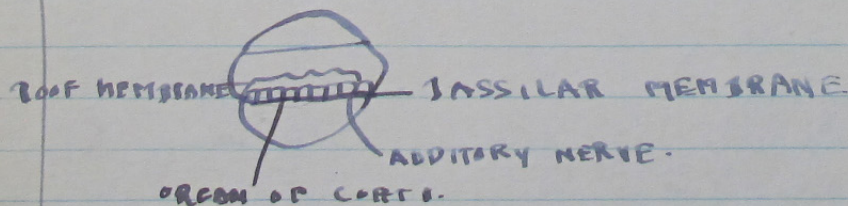
- internal + middle ear bring sound waves to inner ear!

Pinnas collect waves, direct them into internal a. meatus, they strike drum membrane - this membrane sets in motion by vibration the 3 bones.

- Ampulla - ridges on inner surfaces, cells of varying height.
 - hair-like processes.
 - cavity filled with endolymph.
 - movement arouses impulses in vestibular division of auditory nerve - sends them to cerebellum.
 - co-ordinates with impulses from muscles which give muscle sense.



Basilar membrane - ~~trans~~ span of Corti contained.



allows for expansion + motion.

Sound @ pitch - low - long wave lengths.
high - short " " "

② Quality of timbre - kind of sound.
- difference in shape of waves.

③ Loudness - height of note - loud.
low note - soft.

Semi-circular canals.

- 3 dimensions.
- hollow-lined with membrane.
- contain bony material
floating on liquid.
- stimulates hair on membrane.
- used for balance.

Mygiene.

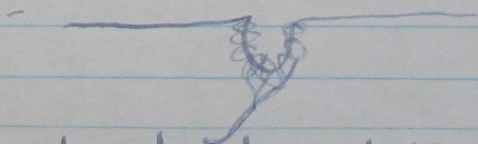
- keep ears clean
- avoid water + insects in ears.
(cottonwood soaked in oil)

Insect - attract it by light
drown it with sweet oil.

Olfactory nerves.

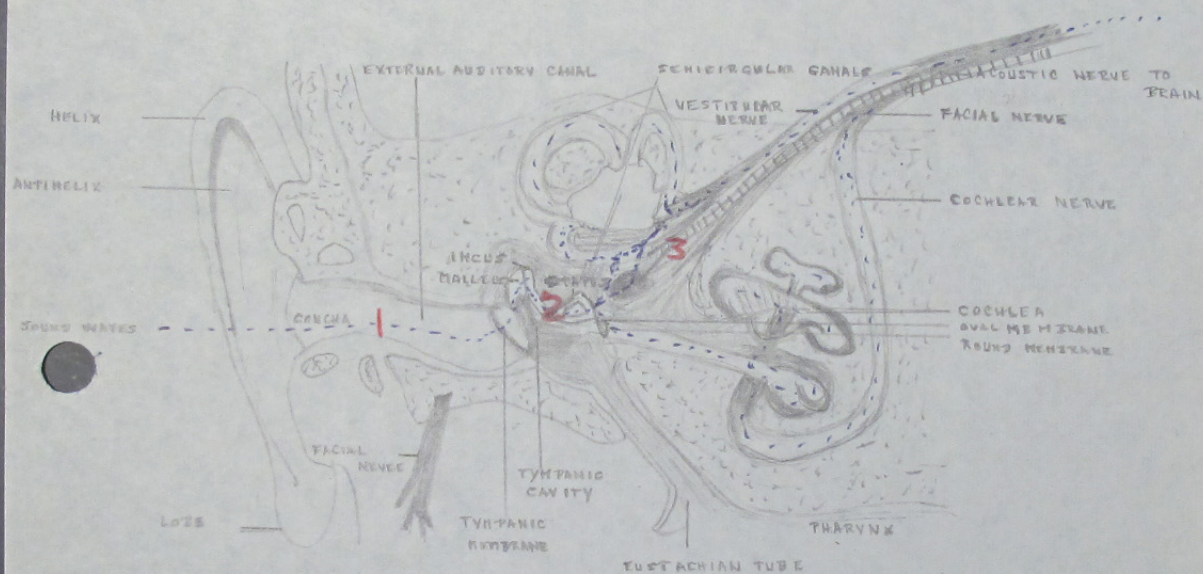
- react to chemical stimuli.

Taste bud



sweet - front bitter - back
salt - sides of tongue.

DIAGRAM OF THE EAR



* 1. 2. 3. HEARING MAY BE INTERFERED

- + vibration of stapes marks stimulus which arouses receptor cells of internal ear to activity.

Two parts of internal ear.

① equilibrium & ② hearing.

Hearing - through apparatus arranged in spiral-shaped cavity, cochlea.

Cochlea - in temporal bone
filled with lymph (perilymph)
- in perilymph space
(membranous cochlea.)
- in membranous cochlea is lymph (endolymph)

● Cells which receive sound waves are a group, the organ of Corti.

Membranous cochlea attached to process of bone in spiral cre of bony cochlea.
- begins near opening of stapes (fenestra ovalis) & ends in spiral turn of $2\frac{1}{2}$ times.
- main part - organ of Corti.

Organ of Corti - group of cells containing cilia on free margin.
- over them projects membrana tectoria.
- cochlear division of auditory nerve reaches organ of C. through internal auditory canal.

● Cross-section of membranous cochlea.
- 3 divisions

(perilymph) scala vestibula & scala tympani
(lymph) cochlear canal.

Reissner's membrane - separates
scala vestibuli from cochlear canal.

How ear hears.

- Organ of Corti stimulated by vibration communicated to perilymph by movement of stapes in fenestra ovalis.
- vibration starts in scala vestibuli & continues to descend over scala tympani.

Fenestra rotundum - lets passents back vibrations.

- movement of perilymph easily communicated to endolymph.
- vibration of endolymph sets in motion membrana tectoria - it moves up & down hair-like processes of organ of Corti.
- this movement stimulates receptor cells of auditory nerve - impulses relayed to the brain.

Impulses on lt. side of lt. internal ear taken to rt. side of brain.

Equilibrium -

3 canals - 1) superior
2) posterior
3) horizontal } perp. to one another.

- developments from utricle.
- near utricle - swelling ampulla.



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